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(56) Documents Cited
GB 2305969 A   GB 2299200 A   EP 0842250 A
WO 97/03801 A1 WO 95/07592 A1 WO 92/12599 A1
US 5590320 A   US 4949187 A

(58) Field of Search
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(54) Abstract Title
Audio player which downloads files from a server.

(57) An audio player for downloading audio information from a server and playing the audio information downloaded. The audio player includes an audio player section (110) for playing an audio file; a communication module (108) for interfacing between the audio player section (110) and a server having a plurality of audio files therein; a memory (102) for storing a program, data, and audio files downloaded from the server; an operating panel equipment (104) with which a user can input commands, the operating panel equipment (104) displaying various display information; and a central processing unit (100) for downloading into the memory (102) the audio files that the user has selected by using the operating panel equipment (104), and providing the downloaded audio file to the audio player section (110).
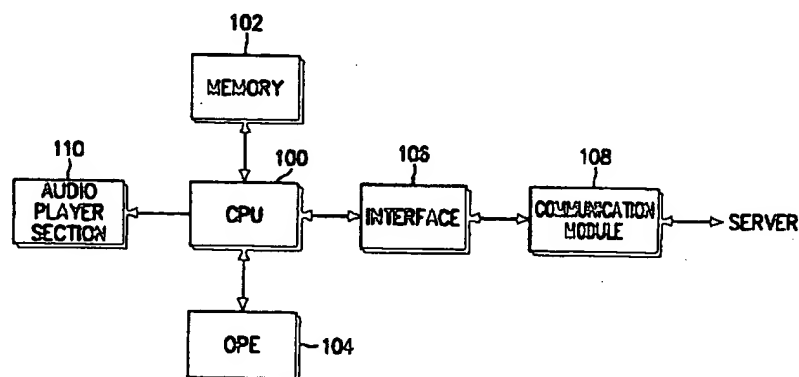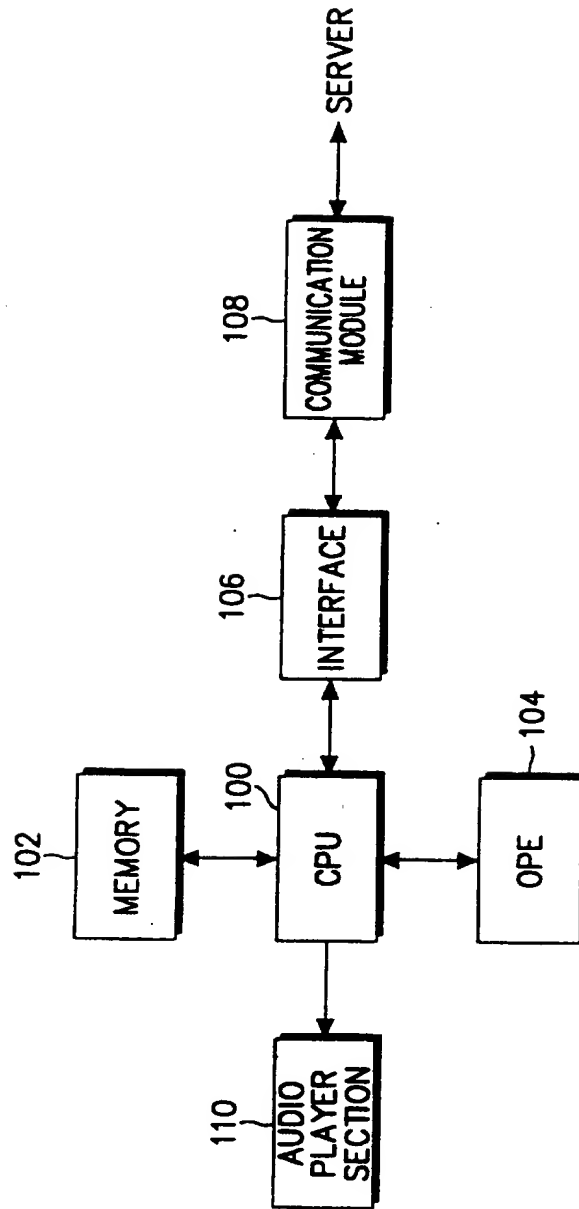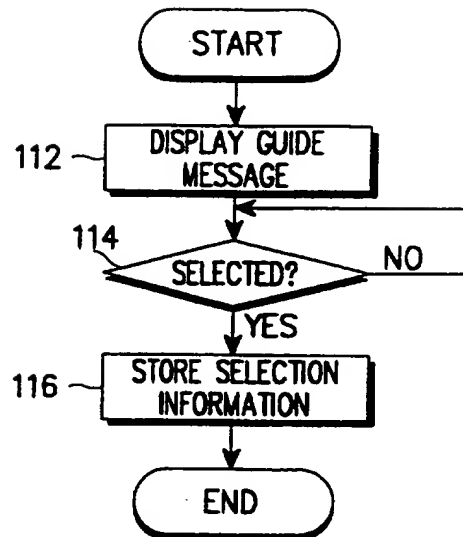

FIG. 1

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FIG. 1

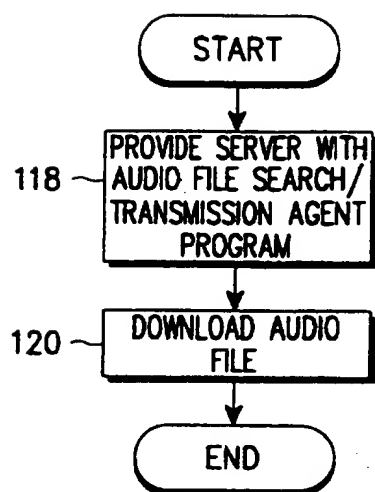START

112 — DISPLAY GUIDE
MESSAGE

114

SELECTED? — NO

YES

116 — STORE SELECTION
INFORMATION

END

FIG. 2

START

118 ~ PROVIDE SERVER WITH AUDIO FILE SEARCH/ TRANSMISSION AGENT PROGRAM

120 ~ DOWNLOAD AUDIO FILE

END

FIG. 3

FIG. 4

START

128— READ AUDIO FILE

130— PLAY AUDIO FILE

END
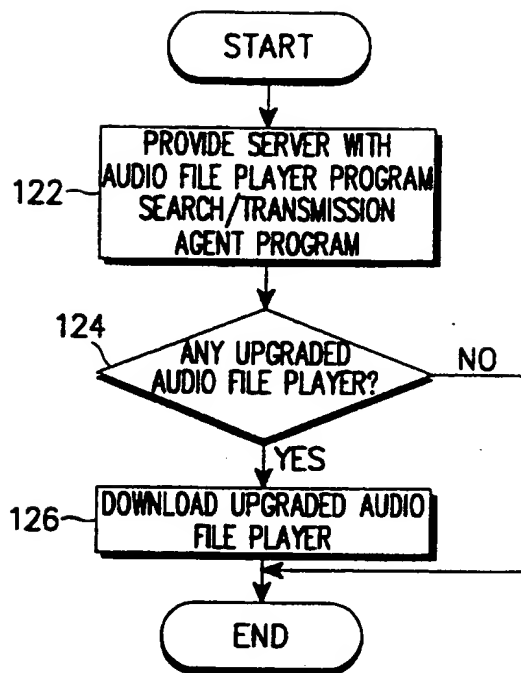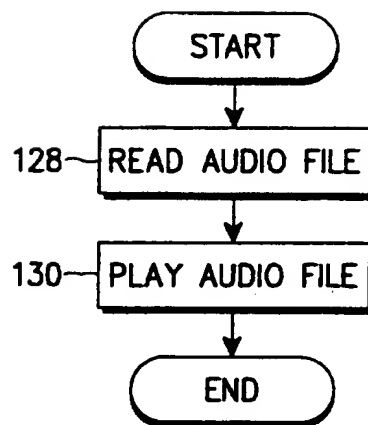
FIG. 5

AUDIO PLAYER

The present invention relates to an audio player, and in particular, to an audio player for downloading an audio
5 file from a server and playing the audio filed downloaded.

A conventional audio system such as a tape recorder or a compact disc (CD) player can record audio signals transmitted from a broadcasting station on an audio
10 recording medium such as a magnetic tape and a compact disc, to enable the recorded audio signal to be played back later on. However, the audio signals provided from broadcasting stations include much audio information, some of which is not required or desired by the user.
15 Furthermore, in order to listen to specific audio information (e.g, music), the user needs to actually purchase the expensive magnetic tape or compact disc onto which the desired audio information is recorded. Furthermore, magnetic tape and compact disc both have
20 limitations in their the audio information recording capability.

Therefore, there has been a long demand for an audio system which is capable of recording and playing audio
25 information without the need for magnetic tape or compact disc.

It is therefore an aim of preferred embodiments of the present invention to provide an audio player for
30 downloading audio information from a server and playing the downloaded audio information.

According to a first aspect, there is provided an audio player comprising: an audio player section for
35 playing an audio file; a communication module for

interfacing between said audio player section and a server having a plurality of audio files therein; a memory for storing a program, data, and audio files downloaded from said server; audio file selection means to which a user can input commands to select an audio file; and a central processing unit for downloading into the memory an audio file selected by the user and providing said downloaded audio file to said audio player section.

Preferably, said audio file selection means further comprises display means for displaying information concerning audio files thereon.

Said audio file selection means enables audio files to be selected by title.

Preferably, said audio file selection means enables audio files to be selected by singer/artist.

Preferably, said audio file selection means enables audio files to be selected according to musical genre.

Said audio file selection means may comprise an operating panel equipment for receiving said input commands and displaying various display information.

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings, in which:

Figure 1 is a block diagram of an audio player according to a preferred embodiment of the present invention; and

FIGs. 2 through 5 are flow charts for illustrating downloading and playing audio information from a server according to a preferred embodiment of the present invention.

A preferred embodiment of the present invention will be described in detail referring to the attached drawings. Though the specific embodiment such as the detailed flow chart will be exemplarily defined and described in detail to clarify the subject matter of the present invention, the present invention may be implemented with the description of the present invention by those skilled in the art even without the details. In addition, an unnecessary detailed description of widely known functions and constructions may be avoided here.

Figure 1 is a block diagram of an audio player according to a preferred embodiment of the present invention. As illustrated, a CPU (Central Processing Unit) 100 controls an overall operation of the audio player, and a memory 102 stores therein a processing program of the CPU 100, various reference information, and audio files downloaded from a server (not shown). An interface 106 interfaces between a communication module 108 and the CPU 100. The communication module 108 may be connected directly to the server by means of a wire or wireless link, to interface between the server and the audio player. Alternatively, the communication module 108 may be connected to the server via the Internet by means of the wire or wireless link, to interface between the server and the audio player. An operating panel equipment (OPE) 104 consists of a display for displaying thereon display information under the control of the CPU 100, and a keypad including a plurality of keys, with which the user may input various commands and select an audio file. An audio

player section 110 plays an audio file stored in the memory 102, under the control of the CPU 100.

Figure 2 is a flow chart of a selection agent program
5 for selecting desired ones only out of the audio files stored in the server. With reference to Figure 2, if the user depresses a selection key on the operating panel equipment 104, the CPU 100 displays a selection guide message on the display of the operating panel equipment
10 104. Herein, the selection guide message refers to a message explaining that the user can select songs by the singer or by musical genre such as ballads or jazz, or can simply select the audio files that the server provides randomly. Subsequent to viewing the selection guide
15 message, the user will make a selection.

The CPU 100 checks at step 114 whether or not the user has made a selection. If the user has made a selection, the CPU 100 proceeds to step 116, and
20 otherwise, waits for the user's selection. At the step 116, the CPU 100 stores the selection information by the user into the memory 102.

Furthermore, the audio player provides the server
25 with an audio file search/transmission agent program which searches the server for the audio file and transmits the searched audio file to the audio player, when the audio player is powered on or when the user inputs a command for downloading the audio file. Figure 3 shows a flow chart of
30 the audio file search/transmission agent program. As illustrated, if the audio player is powered on or if the user inputs the download command, the CPU 100 provides the server with the audio file search/transmission agent program, at step 118. The server executes the received
35 audio file search/transmission agent program to search for

the audio file according to the selection information by the user and to transmit the searched audio file to the audio player. Here, if the user has selected the songs by a specific singer, the audio file search/transmission agent program searches for audio files classified under the selected singers name. Further, in cases where the user has selected a song in a specific genre, the audio file search/transmission agent program compares the feature of the selected genre with the feature of all the audio files in the server, to search for audio files in the genre selected by the user. Here, the above mentioned term "feature" may refer to a rhythm of the audio. After completion of the audio file search, the audio file search/transmission agent program transmits the searched audio files to the audio player and then, becomes extinct. At step 120, the CPU 100 stores into the memory 102 the audio files downloaded from the server by means of the audio file search/transmission agent program.

Moreover, the server may include an upgraded audio file player program for playing audio files of a new format. The audio player provides the server with an audio file player program search/transmission agent program for downloading the audio file player program upon power-on (Step 122). The server executes the audio file player program search/transmission agent program received from the audio player, to check whether the server has an upgraded audio file player program (Step 124). Herein, if the server has the upgraded audio file player program, the audio file player program search/transmission agent program transmits information indicating that the server has the upgraded audio file player program, and transmits the upgraded audio file player program to the audio player at the request of the user (Step 126).

Referring to Figure 4, the CPU 100 checks at step 124 whether or not the information indicating that the server has the upgraded audio file player program is received from the server by means of the audio file player program search/transmission agent program. If the information is received, the CPU 100 proceeds to step 126, and otherwise, completes the procedure. At the step 126, the CPU 100 downloads the upgraded audio file player program from the server.

Under the condition that the audio files are downloaded into the memory 102 of the audio player, the CPU 100 executes the audio file player program according to the audio play command by the user, to read the audio file stored in the memory 102 and provides the read audio file to the audio player section 110. Figure 5 shows a flow chart of the audio file player program. Referring to Figure 5, the CPU 100 reads the audio file from the memory 102 at step 128, and plays the read audio file through the audio player section 110 at step 130. After completion of playing the audio file, the CPU 100 repeats the steps 128 and 130 to play the next audio file.

As described above, with use of the audio player device according to the present invention, the user can listen to the music, without purchasing the expensive magnetic tape or compact disc. In particular, it is possible to enjoy a great number of songs even in a vehicle which has not enough room to accommodate the large number of recording media such as the magnetic tape and compact disc.

While the invention has been shown and described with reference to a certain preferred embodiment thereof, it will be understood by those skilled in the art that

various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

5　　The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and
10　　documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or
15　　process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification
20　　(including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of
25　　a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features
30　　disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

CLAIMS

1.   An audio player comprising:

an audio player section for playing an audio file;

a communication module for interfacing between said audio player section and a server having a plurality of audio files therein;

a memory for storing a program, data, and audio files downloaded from said server;

audio file selection means to which a user can input commands to select an audio file; and

a central processing unit for downloading into the memory an audio file selected by the user and providing said downloaded audio file to said audio player section.

2.   An audio player according to claim 1, wherein said audio file selection means further comprises display means for displaying information concerning audio files thereon.

3.   An audio player according to claim 1 or 2, wherein said audio file selection means enables audio files to be selected by title.

4.   An audio player according to any of claims 1 to 3, wherein said audio file selection means enables audio files to be selected by singer/artist.

5.   An audio player according to any of the preceding claims, wherein said audio file selection means enables audio files to be selected according to musical genre.

6.   An audio player according to any of the preceding
claims, wherein said audio file selection means comprises
an operating panel equipment for receiving said input
commands and displaying various display information.

5

7.   An audio player substantially as herein described
with reference to the accompanying drawings.

The Patent Office

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.P): G5R (RGA, RB72, RB73, RAC, RAD); H4R (RPX, RSX)
Int Cl (Ed.6): G11B 27/00, 27/10, 31/00; H04H 1/02
Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2306869 A (GARTEN) Page 7 and figure 1.	1, at least
X	GB 2299200 A (MU-6 SYSTEMS LTD.) Figure 1 and Abstract.	1, at least
X	EP 0642250 A (DICTAPHONE CORPORATION)Figure 3. Column 4, lines 20-24 and column 5, lines 35-43	1, at least
X	WO 97/09801 A1 (STARGUIDE DIGITAL NETWORKS INC.) Figure 1 and Abstract.	1, at least
X	WO 95/07592 A1 (INTERNATIONAL DIGITAL TECHNOLOGIES) Figure 1b and claim 1.	1, at least
X	WO 92/12599 A1 (YURT et al.) Figure 2a and Abstract.	1, at least
X	US 5590320 (MAXEY) Column 2, lines 60+ and column 3, lines 1-23.	1, at least
X	US 4949187 (COHEN) Figures 1-3.	1, at least